Line 5 Wisconsin Segment Relocation Project

Wetland and Waterbody Restoration and Post-Construction Monitoring Plan

DRAFT

March 2024
Rev 3

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ACRONYMS AND ABBREVIATIONS

Name	Description
ASNRI	Areas of Special Natural Resource Interest
BMP	Best Management Practice
Bad River Band	Bad River Band of Lake Superior Chippewa Tribe
ECD	Erosion and Sediment Control Device
Enbridge	Enbridge Energy, Limited Partnership
EPP	Environmental Protection Plan
GPS	Global Positioning System
LiDAR	Light Detection and Ranging
Monitoring Plan	Wetland and Waterbody Restoration and Post-Construction Monitoring Plan
Project	Enbridge Energy Line 5 Wisconsin Segment Relocation Project
Reservation	Bad River Reservation
ROW	Right-of-Way
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WDNR	Wisconsin Department of Natural Resources
WQMP	Water Quality Monitoring Plan
WRAM	Wisconsin Wetland Rapid Assessment Methodology

1 PROJECT INTRODUCTION

Enbridge Energy, Limited Partnership ("Enbridge") owns the U.S. portion of the world's longest liquid petroleum pipeline system. Combined with the Canadian portion, the operationally integrated pipeline system spans approximately 3,200 miles across North America and has been in operation since 1950.

Enbridge's existing Line 5 pipeline is a 645-mile interstate pipeline that originates in Superior, Wisconsin, traverses northern Wisconsin and the Upper and Lower Peninsulas of Michigan, and terminates near Sarnia, Ontario, Canada. The Wisconsin portion of the existing Line 5 pipeline crosses Douglas, Bayfield, Ashland, and Iron Counties. Within Ashland County, the existing Line 5 crosses through approximately 12 miles of the Bad River Reservation ("Reservation") of the Bad River Band of Lake Superior Chippewa Tribe ("Bad River Band").

Enbridge and the Bad River Band have been in discussions for several years regarding renewal of pipeline easements on 15 parcels of land through the Reservation. In January of 2017, the Bad River Tribal Council announced their decision to deny renewal of Enbridge's easements. Enbridge entered into mediation with the Bad River Band and in July 2019, the Bad River Band terminated mediation discussions and filed suit against Enbridge seeking removal of the pipeline from the Reservation. In response to the discussions with the Bad River Band and litigation filed in July 2019, Enbridge developed the Line 5 Wisconsin Segment Relocation Project ("Project").

The Project will relocate the existing Line 5 pipeline around the Reservation and replaces approximately 20 miles of the existing Line 5 pipeline, including the segment of the existing Line 5 pipeline that traverses through the Reservation, with approximately 41 miles of new, 30-inch outside diameter pipeline segment located entirely outside the Reservation.

Enbridge has prepared this Wetland and Waterbody Restoration and Post-Construction Monitoring Plan ("Monitoring Plan") to evaluate and determine the success of wetland and waterbody restoration within the affected workspace following construction of the Project.

Restoration activities that will occur immediately after construction to stabilize and seed the disturbed construction workspace are described in Enbridge's Environmental Protection Plan ("EPP"). Post-construction monitoring will begin during the first growing season after the restoration work is complete. Monitoring will not be considered complete until the performance standards described in this Plan have been met and reviewed and approved by the applicable agencies. If the performance standards have not been met by the end of the planned monitoring period (e.g., six years for wetlands), Enbridge, as directed by the applicable agencies, will either extend monitoring at those sites, develop a site-specific restoration plan, or provide additional mitigation.

1.1 MONITORING PLAN OBJECTIVES

The purpose of this Monitoring Plan is to establish the monitoring procedures and performance standards that will be used to:

- determine the status of wetlands and waterbodies restoration;
- document where successful wetland and waterbody restoration has been achieved; and
- identify additional mitigative measures that may be warranted if successful restoration in specific wetlands or waterbodies has not been achieved.

This Monitoring Plan is based on pre-construction data already collected to document aquatic resources; including previous data, analyses, and procedures submitted in support of Enbridge's U.S. Army Corps of Engineers ("USACE") and Wisconsin Department of Natural Resources ("WDNR") applications to help establish baseline conditions. The Monitoring Plan also: describes the monitoring methodology to be followed during specified time periods following completion of the Project; identifies performance criteria to evaluate the success of wetland and waterbody restoration; and describes the contents of required monitoring reports, including, but not limited to conclusions regarding monitoring results and recommendations for appropriate next steps such as additional monitoring, adaptive management, and/or additional mitigation, to respond to areas that are not successfully restored during the planned monitoring period.

2 QUALIFICATIONS

Post-construction monitoring of restored wetlands and waterbodies will be performed using personnel under contract with Enbridge who meet the following requirements:

- Personnel leading the monitoring activities for a given monitoring team will hold a bachelor's degree or higher in biological/natural resources and/or soil science, field research experience including project design sampling and analysis, experience/knowledge in wetland plant community ecology, and vegetation sampling/identification. Alternatively, personnel will have 10 years of field research, project design, and analytical experience; and experience/knowledge in wetland plant community ecology and vegetation sampling/identification.
- Personnel collecting the data shall demonstrate knowledge of local flora prior to fieldwork, including the identification of a range of native and non-native plant species expected to be encountered onsite. Personnel should be qualified to identify unknown plant species with a regional dichotomous key and/or herbarium work. Personnel must also demonstrate familiarity with soils and hydrology.

3 PRE-CONSTRUCTION BASELINE DATA

Enbridge completed wetland surveys along the Project route in 2019 and 2020 and submitted a 2019 Wetland and Waterbody Survey Report and an addendum report that included the information collected during the 2020 field season to both the USACE and the DNR. As described in more detail in Sections 3 and 4, Enbridge collected and compiled in its reports the following pre-construction baseline data for wetlands and waterbodies within the proposed workspace of the Project:

- Field-delineated wetland community types according to Cowardin et al. (1979), Circular 39 (U.S. Fish and Wildlife Service ["USFWS"], 1956), Wisconsin Wetland Inventory (1992), and Eggers and Reed (2014) classification systems;
- Publicly available data, such as aerial imagery, U.S. Geological Survey topographic maps and U.S. Geological Survey gage data;
- Field-delineated dominant plant species by stratum at sampling points;
- Field characterization of hydric soil types and wetland hydrology (e.g., inundated, saturated soils);
- Field-determined wetland functional assessments within an environmental survey corridor;
- Representative photos of wetland sample point locations and associated plant communities;
- Field-delineated waterbody locations;
- Waterbody characterizations, including top of bank width water depth, ordinary high-water mark, dominant substrate type, flow regime, and dominant riparian vegetation;
- Visual assessments of streambed characteristics (observed streambed materials and characteristics such as gravel, cobble, riffles, pools);
- Visual assessments of fish habitat such as undercut banks, instream structures (e.g., logs), potential spawning gravel; and
- Visual evidence of bank erosion at or near the proposed centerline crossing.
- Waterbody bank vegetation community type (i.e., Eggers and Reed, 2014), where applicable;
- Representative photos of both wetlands and waterbody at the time of survey;
- Quantified and qualitative assessments of wetland and waterbody impacts.

Enbridge will augment the existing baseline data, with the following additional information that will be collected prior to construction:

- Elevation data developed using civil survey methods or Light Detection and Ranging ("LiDAR") along the proposed Project route;
- For perennial stream crossings that will be crossed using a trenching technique (dry crossing method) Enbridge will collect additional information using civil survey methods of the stream longitudinal channel elevations within the isolated section of the waterbody crossing (between the upstream and downstream dams). This information will be acquired at the time of construction after the dams have been installed and the isolated segment of stream has been dewatered.
- Photographs documenting each bank crossing at the proposed centerline as well as at locations approximately 100 feet upstream and 100 feet downstream of the Project workspace, corresponding to pre-established stream water quality sampling locations.

4 WETLAND IDENTIFICATION, FUNCTIONAL ASSESSMENT, AND DISTURBANCE

4.1 WETLAND IDENTIFICATION

Table 4.1-1 summarizes the Cowardin wetland classification types the corresponding Wisconsin Wetlands Inventory classification system and the Eggers & Reeds classifications of wetlands (natural features) affected by the Project. Additional information regarding the specific wetland types identified during the field surveys is provided below. Enbridge also developed a Compensatory Wetland Mitigation Plan that addresses temporal wetland impacts, wetland conversion (e.g., conversion of forested wetland to emergent wetland), and permanent wetland fill. The Compensatory Wetland Mitigation Plan has been submitted to and reviewed by the respective agencies. Refer to the Compensatory Wetland Mitigation Plan for further wetland definitions.

Table 4.1-1: Wetland Classification Types

Cowardin Classification	Wisconsin Wetlands Inventory	Eggers & Reed Classification
PEM (palustrine emergent)	Emergent/Wet Meadow Scrub/Shrub (Broad-leaved evergreen)	Bog; Deep Marsh; Farmed Wetland; Fresh Meadow; Open Bog; Seasonally Flooded Basin; Sedge Meadow; Shallow Marsh; Shallow Open Water; Wet Meadow
PSS (palustrine scrub-shrub)	Scrub/Shrub (Broad-leaved deciduous, Needle-leaved deciduous, Needle-leaved evergreen)	Alder Thicket; Bog; Coniferous Swamp; Shrub-Carr
PFO (palustrine forested)	Forested (Broad-leaved deciduous, Needle-leaved deciduous, Needle-leaved evergreen)	Coniferous Bog; Coniferous Swamp; Floodplain Forest; Hardwood Swamp

As noted in the Wetland and Waterbody Survey Report, some of the wetlands included multiple Cowardin and/or Eggers and Reed classifications within the same wetland system. Where this occurred, Cowardin community types within the wetland were mapped according to community type.

4.2 WETLAND FUNCTIONAL ASSESSMENT

The wetland delineation data forms specifically referenced the area being sampled. Because, this measure alone does not address the condition and functional value of the sample area or the entire feature, field crews also evaluated each wetland using the Wisconsin Wetland Rapid Assessment Methodology ("WRAM")[1] as applied to

[1] Minnesota Natural Heritage and Nongame Research Program, and Ecological Land Classification Program. Biological Report 92. St. Paul: Minnesota Department of Natural Resources.

the features of the wetland observed within the linear survey corridor. WRAM was applied to determine wetland functions, including: Floristic Integrity; Human Use Values; Wildlife Habitat; Fish and Aquatic Life Habitat, Shoreline Protection, Flood and Stormwater Storage, Water Quality Protection, and Groundwater Processes of the surveyed area and buffer. The floristic integrity assessment was focused on answering primary questions pertaining to invasive species cover, strata, Natural Heritage Inventory plant community ranking, and relative frequency of the plant community within the watershed. Excluded from this assessment was the optional documentation of vascular plant species and cover/abundance. The WRAM data sheets for these assessments were included in Enbridge's Wetland and Waterbody Survey Report.

Enbridge then used the WRAM data sheets to assign an overall functional value rating of: Low, Low-invasive, Medium, or High to each wetland. The assignment process was conservative, and the highest potential overall general functional value was assigned to each wetland. The overall assigned WRAM Functional Value Rating for each wetland is an average of the eight individual component ratings. Where ratings were similar between levels (i.e., 3 high ratings, 3 medium rating, 1 low rating, and 1 N/A rating) the overall rating was generally "rounded up" to High.

Additional vegetation surveys were conducted during the 2022 field season on a subset of wetlands within the Project area to expand the assessment of floristic integrity. These additional surveys were restricted to wetlands that were determined to be of medium to high functional value based on the data collected during the initial wetland delineation field efforts (2019-2020).

The 2022 evaluations used a modified timed-meander survey method that deviated from the WDNR timed-meander approach in several ways.

1. Traditional timed-meander surveys evaluate entire features. However, Enbridge does not have unlimited access to all lands outside the Project survey corridor, such as wetland areas that extend beyond the Project's workspace. The "assessment area" for each evaluated wetland feature was restricted to areas that would be disturbed by construction (Project limits of disturbance). Thus, the survey effort only reflects the portion of the wetland area within the Project workspace.
2. Under the traditional method in Wisconsin[2], species are recorded in 5-minute increments, noting which increment a species was first observed (e.g., 0-5 minutes, 5-10 minutes, etc.). It is suggested that surveys occur for a minimum of 30 minutes. This process can continue beyond 30 minutes under different scenarios, but the process is also flexible and allows the practitioner to stop before reaching a full 30 minutes. The approach implemented for this Project was to evaluate the entire defined assessment area and record every vascular plant species encountered.
3. Abundance codes were not collected for this survey since they are non-numerical and cannot be used for analysis purposes.
4. The WRAM methodology, regarding estimation of percent cover, is not specific other than just indicating "Estimates of percent cover may be based upon a visual estimation or quantitative data." As implemented here, broad cover categories were utilized via the Braun-Blanquet cover and abundance scale since this approach promotes "agreement among different observers when estimating cover[3]." Under the approach implemented here, which was not plot based, six different cover and abundance categories were used for this specific assessment (single individual with less than 5% cover, multiple individuals with less than 5% cover, 5-25% cover, 25-50% cover, 50-75% cover, and 75-100% cover).

[2] Timed-Meander Sampling Protocol for Wetland Floristic Quality Assessment, WDNR

[3] Minnesota Department of Natural Resources. 2013. A handbook for collecting vegetation plot data in Minnesota: The relevé method. 2nd ed. Minnesota Biological Survey, Minnesota Natural Heritage and Nongame Research Program, and Ecological Land Classification Program. Biological Report 92. St. Paul: Minnesota Department of Natural Resources.

Separate and independent timed-meander surveys were conducted for each wetland community type. As such, multiple surveys were often conducted within a wetland with multiple community types as mapped during wetland delineation efforts.

4.3 CONSTRUCTION IMPACTS

The primary impacts of pipeline construction and right-of-way maintenance activities on wetlands are (i) the temporary removal of wetland vegetation during active construction and (ii) the conversion of forested and shrub-scrub wetland vegetation to emergent wetland vegetation within the permanent right-of-way. Additional temporary impacts include diminishment of the recreational and aesthetic value of the wetlands crossed and a temporary removal or alteration of wetland wildlife habitat. There is also a potential for impacts on groundwater and surface water hydrology particularly in the vicinity of blasting, or as a result of changes in topography. These effects would be greatest during and immediately following construction and most, expect for vegetation and habitat impacts, will cease after the trench is backfilled, trench breakers are installed, contours are restored, and erosion controls are installed. In emergent ("PEM") wetlands, the impact of construction vegetation and habitat is relatively brief since herbaceous vegetation will typically regenerate within one or two growing seasons. In forested ("PFO") and scrub-shrub ("PSS") wetlands, the vegetation and habitat impacts last longer due to the longer period required for the establishment of these vegetation life forms (i.e., broad-leaved deciduous or coniferous species).

Project construction activities will result in approximately 101.1 acres of temporary wetland disturbance associated with clearing, pipeline installation activities, and the establishment of temporary access roads. As indicated in Table 3-2, PEM wetlands and more than half of the affected PFO and PSS wetlands (totaling together approximately 67.2 acres of wetlands) will be allowed to revert to their original cover type after construction. The remaining approximately 33.9 acres of PFO and PSS wetland will be converted to PEM wetland within the permanent right-of-way as a result of vegetation maintenance during operation of the pipeline. A total of approximately 0.02 acre of PEM and PSS wetland will be filled for construction of aboveground facilities permanent access roads.

Table 4.3-1: Summary of Line 5 Wetland Impacts

Wetland Type [a]	Impact Areas - Allowed to Revert to Pre-construction Wetland Cover Type (Acres) [b]	Impact Areas - Converted from One to Another Wetland Type (Acres) [c]	Permanent Impact (Acres) [d]
Palustrine Emergent (PEM)	28.1	0	0.02
Palustrine Forested (PFO)	32.8	30.1	0
Palustrine Scrub/Shrub (PSS)	6.3	3.9	<0.01
TOTAL	67.2	33.9	0.02

[a] The numbers in this table have been rounded for presentation purposes. As a result, the totals may not reflect the sum of the addends.
[b] Wetland type based on Cowardin, 1979.
[c] Based on temporary workspace disturbance due to construction activities.
[d] Based on permanent right-of-way ("ROW") with conversion from PSS and PFO to PEM.
[e] Based on permanent wetland impacts (fill).
Note: Numbers have been rounded for display purposes.

4.4 WETLAND RESTORATION

To the extent practicable, Enbridge will restore affected wetlands to preconstruction conditions, which is considered in-place compensation, but not in-kind in all wetland types and not in-advance compensation. Enbridge will also provide compensatory wetland mitigation for unavoidable Project-related impacts including temporary loss of wetland cover, permanent conversion of wetland type, and permanent wetland fill.

Emergent wetlands (including converted features) will be seeded using the seed mix provided in Appendix B of the Project's EPP to provide temporary cover and supplement natural revegetation via the seeds and rhizomes in the topsoil spread back over the excavated area after pipe installation. No fertilizer, lime, or mulch will be applied in wetlands.

Enbridge does not intend to seed wetlands with standing surface water (*e.g.*, open water). Re-establishment of vegetation in these types of wetlands occurs best through natural process without supplemental seeding. Enbridge plans to allow natural reforestation of the temporary workspace area within forested and shrub wetlands via stump sprouting, root sprouting, and natural recruitment.

4.5 WETLAND MONITORING OBJECTIVES

The goal of the post-construction wetland monitoring program will be to assess quantitatively and/or qualitatively the success of post-construction wetland restoration through documentation of wetland elevations, hydrology, plant cover, plant distribution, and species composition of plant communities in the wetlands impacted by pipeline construction and operation. The following protocol was developed to establish a standardized monitoring procedure that can be repeated and used to evaluate the effectiveness of wetland restoration efforts and to identify areas that may require additional management.

4.6 WETLAND MONITORING METHODOLOGY

Enbridge will generally maintain a 50-foot-wide operational corridor along the pipeline in an herbaceous state to facilitate aerial monitoring and pipeline access. This maintained corridor has been reduced to a 30-foot-wide area in most locations where the pipeline will be installed using the HDD or Direct Pipe method. Maintaining the operational corridor will result in portions of forested and shrub dominated wetlands being permanently converted to emergent wetlands by routine clearing within the permanent easement. The status of revegetation in these permanently converted forested/shrub-dominated areas will be described, inventoried, and assessed similar to naturally occurring emergent wetlands during post-construction monitoring. The remaining portion of the workspace will be allowed to revert back to pre-construction conditions (e.g., forested) and will not be maintained.

In accordance with this Monitoring Plan, data will be collected to determine the revegetation success of wetlands located within the Project workspace. Monitoring will involve a general methodology strategy for most affected wetland features, with a more intensive methodology for a subset of wetland features. This subset includes those wetland features having either a high functional value or a medium functional value with a high floristic quality rating, as well as select wetland adjacent to Areas of Special Natural Resource Interest ("ASNRI") waterbodies. Additional chemical analysis will be performed in accordance with Enbridge's Water Quality Monitoring Plan ("WQMP").

4.6.1 Year 1 Post-Construction Monitoring

General Monitoring Approach

Post-construction monitoring activities will begin during the growing season in the first year following construction ("Year-1 monitoring"). During the Year-1 monitoring period, Enbridge will visit each wetland within the pipeline workspace (wetlands along the pipeline construction corridor, access roads, yards, and valve sites). Year-1 monitoring will initially focus on landscape related issues as well as general observations including vegetation. Landscape related issues will involve evaluating the topography and stabilization of wetland crossings, specifically crowning or subsidence, particularly over the trench. Enbridge will record site conditions in each wetland including:

- Initial establishment of wetland vegetation, exposed or bare areas devoid of vegetative cover;
- Observations of hydrologic indicators (relevant primary and secondary indicators);
- Incidental wildlife observation including listing what wildlife was observed (avian, herpetological, mammal);

- Observations of elevation changes that affect wetland hydrology (high or low grade as visually compared to surrounding areas);
- Representative landscape-oriented photographs positioned approximately five feet above the ground, will be taken within each wetland and locations recorded using GPS. These photographs will serve to document conditions during the first-year post-construction;
- Status of erosion controls and general site stabilization (e.g., erosion); and
- Visual evidence of rutting, compaction, or erosion; status of erosion controls; off-road vehicle activity and/or other third-party disturbances[4].

Any issues observed will be documented for follow-up corrective action.

Timed Meander Surveys

During Year 1 monitoring, Enbridge will also conduct a modified timed-meander survey in each wetland within the mainline corridor. As discussed in Section 4.2, the timed-meander survey will be restricted to the construction corridor, deviating from traditional meander methods that involve evaluation of the entire feature in question. These efforts will involve evaluating permanent and temporary workspace segments of the Project right-of-way separately. The meander survey within the permanent easement will primarily focus on the area disturbed during excavation for the pipeline. Furthermore, wetland features with multiple pre-construction wetland communities (based on Cowardin classification) will be sampled by community class/type.

For timed meander purposes, species will be recorded in 5-minute increments, noting which increment a species was first observed (e.g., 0-5 minutes, 5-10 minutes, etc.)[5]. Unless otherwise noted, plant nomenclature, in general, will follow Flora of North America. The duration of each timed-meander will be adjusted by the practitioner based on site conditions and the level of revegetation (e.g., sparce vegetation or species diversity encountered). Species' cover/abundance will be recorded using the Braun-Blanquet cover/abundance scale. Cover will consist of five cover classes (0-5%, 5-25%, 25-50%, 50-75%, and 75-100%). Abundance will be recorded for species having less than 5% cover, either noting a single individual or more than one individual observed. Additionally, species distribution will be noted (i.e., localized, throughout etc.).

Monitoring Plots

In addition to the collection of the Year 1 Post Construction baseline information described above, Enbridge will establish 10 m^2 plots (monitoring plot locations will be selected by field personnel during the first monitoring season in areas that are representative of the wetland) to conduct additional vegetation monitoring in future years (see Figure 1). Monitoring plots will be established in 50 percent of the low and medium functional value wetlands. Where a wetland is intersected by the Project workspace in more than one location, the sample plot will be selected within one of the intersected areas. The specific wetlands will be randomly selected prior to conducting the first-year post-construction monitoring field work.

Monitoring plots will also be established in all high functional value wetlands, medium functional value wetlands with high floristic quality, as well as in select wetlands adjacent to ASNRI waterbodies. Wetlands located between the HDD entry and exit points where Enbridge reduced the construction right-of-way to 30 feet and activities were restricted to only vegetation clearing (which will be maintained as part of the permanent easement) will be monitored using the modified timed meander survey methods to document the general condition of the wetland and to identify noxious and invasive species locations, general vegetation density (estimated percent cover using the Braun-Blanquet cover/abundance scale), and extent. No plots would be established in these wetlands.

[4] Other third-party disturbances could include excavations, filling, tree clearing/forestry activity, and livestock grazing.

[5] Timed-Meander Sampling Protocol for Wetland Floristic Quality Assessment, WDNR

At a minimum, two plots will be established for approximately every one-acre of affected (within Project mainline workspace) wetland. One monitoring plot will be established within the permanent easement and one monitoring plot will be established within the temporary workspace. The monitoring plot within the permanent easement will be centered on the area excavated/backfilled for installation of the pipeline. Additional monitoring plots will be established in larger wetlands having multiple Cowardin communities (e.g., both PFO and PEM) and/or wetlands with greater than one acre of wetland disturbance associated with Project mainline construction. An additional sample plot will be established for each 0.5-acre of wetland disturbance over one acre. If a wetland is not large enough to accommodate the respective sample plots or the entire wetland is located within the construction ROW, monitoring will be conducted using the modified timed meander survey method. Additionally, if a wetland does not extend into the permanent easement, a plot will be established only in the temporary workspace.

The location of each plot will be recorded by global positioning system ("GPS") and marked on aerial-based maps. Where allowed by landowners and/or land managing agencies, small markers, such as 0.5-inch diameter PVC markers, will be installed at the corners of the respective sample plots to maintain consistent plot locations for the duration of the monitoring efforts. Actual sampling of plots should occur within the months of June – August, but resampling should occur within three weeks of on either side of the original sampling date.

For each monitoring plot, all species observed within the plot will be recorded as well as the overall native cover and invasive species cover. As described in the modified meander surveys methods, plant nomenclature will follow Flora of North America unless otherwise noted. Species cover/abundance will be recorded using the Braun-Blanquet cover/abundance scale. Cover will consist of five cover classes (<5%, 5-25%, 25-50%, 50-75%, and 75-100%). Species with an abundance under 5% will be divided into three designations: one single individual, 2 to 20 individuals, and greater than 20 individuals.

Multiple plot photos will be recorded at fixed points, taken at roughly 5 feet above the ground surface in a landscape-oriented position. Generally, the southwest (or as near as possible) plot corner will serve as the fixed photo location.

4.6.2 Wetland Monitoring Years 2 through 6

Enbridge will continue to monitor the revegetation of affected wetlands annually for up to 6 years to assess wetland restoration as described in the Year 1 Post Construction Monitoring - General Wetland Conditions effort. Enbridge will visit each wetland annually during the monitoring period to assess general site conditions, as listed in Table 4.6.2-1. Enbridge will conduct the modified timed-meander survey in each wetland within the mainline corridor during the Year 1, 3, and 5 monitoring events. Enbridge will conduct the plot monitoring during Year 2, 4, and 6 monitoring events. Wetland monitoring during years 2 through 6 will also focus on both landscape level and on-the-ground assessments of whether hydrology on and off the right-of-way are similar. Enbridge will also revisit any areas of crowning or subsidence, or other sites identified during previous monitoring events where restoration has not met the performance standards established in Section 4.7. If possible, the subsequent monitoring will be performed during the same season/time of year as the Year 1 monitoring.

Table 4.6.2-1: Year 2 through 6 Wetland Monitoring

Monitoring Activities	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
General Revegetation Success	X	X	X	X	X	X
Topography (crowning/subsidence/elevation changes)	X	X	X	X	X	X
Stabilization	X	X	X	X	X	X
Photos taken in each direction	X	X	X	X	X	X
Observations of Hydrologic Indicators	X	X	X	X	X	X
Status of erosion controls	X	X	X	X	X	X
Observations of off-road vehicle activity	X	X	X	X	X	X

Incidental wildlife observations	X	X	X	X	X	X
Noxious/invasive species presence/ comparison against preconstruction condition	X	X	X	X	X	X
Plot sampling (select wetlands)	X [a]	X		X		X
Timed-meander survey	X		X		X	
Access Roads, Yards MLV 1, 2, and 7	X	X	X			
Hydrologic Monitoring	X	X	X			

[a] Plot locations to be established in select wetlands during the Year 1 Post Construction Monitoring period however, plot sampling will not occur during the first year.

Enbridge's Operations will also conduct aerial patrols of the pipeline right-of-way in accordance with federal frequency requirements (set forth at 49 CFR §195.412). Aerial patrol personnel will inspect the surface conditions at intervals not exceeding 3 weeks, but at least 26 times each calendar year on or adjacent to each pipeline right-of-way. Personnel are trained to look for signs of potential erosion and/or changes to waterways that could affect the pipeline such as stream scouring/bank failure, new beaver dam impoundments, or similar changes. If any issues are identified during aerial patrols, Enbridge will dispatch ground personnel to investigate the locations further. Aerial patrols will continue as long as the pipeline is in operation and/or in accordance with applicable federal requirements. Table 4.6.2-1 outlines monitoring activities taking place post- construction Year 1 through Year 6.

If adjustments in the monitoring parameters are needed, the respective changes will be discussed with the applicable agencies prior to implementing the change and will be in the respective annual monitoring reports.

4.6.3 Wetland Hydrological Monitoring

Agencies have expressed concern that construction of the pipeline, including areas of potential blasting, could alter the hydrology of seeps and groundwater discharge wetlands. To address this concern, Enbridge will install shallow groundwater monitoring wells within select wetlands to monitor for changes in near-surface saturation and hydrology. Enbridge reviewed high to medium functional wetlands for the potential to install site-specific groundwater elevation monitoring wells. Criteria used to select the list of wetlands where groundwater elevation monitoring wells could be installed included:

(1) Wetland is located within the mainline construction corridor (excludes temporary access roads, pipe yards, valve sites);
(2) Wetland will be crossed by the pipeline centerline (excludes wetlands that are within the temporary workspace, but will not be excavated to install the pipeline);
(3) Pipeline centerline crossing distance was at least 100 feet in length to provide appropriate locations for groundwater monitoring well placement;
(4) Preference was assigned to wetlands with permanent conversion within the permanent easement (PFO to PEM or PSS to PEM conversion);
(5) Preference was assigned to wetlands located on Tri-State Holdings parcels, public land parcels, followed by select private parcels;
(6) Preference was assigned to wetlands without access concerns (i.e., no large river crossings);
(7) Preference was assigned to wetlands with an overall WRAM Functional Value Rating of either High Quality or Medium Quality with High Floristic Integrity; and
(8) Selected wetlands include both features where blasting is anticipated as well as features where blasting is not anticipated.

A list of wetlands where monitoring wells are proposed (pending landowner permission) is included in Appendix A. Enbridge will attempt to acquire landowner permission for those wells that are proposed on private lands. Enbridge will work with USACE to finalize the well installation locations within the selected wetlands.

Groundwater elevation monitoring wells will be installed in 2024 within the selected wetlands on either side of the construction ROW but located outside of the construction workspace (where landowners have provided approval). Well locations will be protected during active construction to prevent potential damage. Groundwater monitoring wells will be installed in pairs upgradient and downgradient of the pipeline to assess if there are changes in groundwater elevations near the pipeline. Each monitoring well pair will be installed to a depth of 15 inches. Monitoring wells may be installed at shallower depths if restrictive soil layers are encountered within the installation depth, or a new installation location will be selected. Monitoring wells will not be installed through any such restrictive layer. Wells will be installed in accordance with the USACE document "Guidance on Design, Installation and Interpretation of Monitoring Wells for Wetland Hydrology Determinations"[6].

Following trench backfill and establishment of final grade, a third well will be installed at each monitoring well site, within the area excavated for installation of the pipeline. Enbridge will also attempt to identify a comparable reference wetland in the Project area for installation of a monitoring well to assist in identifying groundwater elevation trends associated with natural groundwater fluctuations due to precipitation events.

Data loggers will be used to collect groundwater elevation data during the frost-free period prior to construction and in Years 1, 2, and 3 post-construction or until the performance standards (see Section 4.8.1) have been met and reviewed by the applicable agencies. Where performance standards at specific sites have not been met by Year 3 of monitoring, Enbridge, in consultation with the agencies, may extend monitoring at those sites and/or investigate potential reasons for the difference in groundwater elevations.

4.6.4 Access Roads, Yards, and Valve Sites

Temporary wetland impacts associated with access roads, yards, and mainline valve sites 1, 2, and 7 will be minimized to the extent practicable by the placement of timber mats (or equivalent). Enbridge will monitor these locations for introduction and/or expansion of existing invasive and noxious species populations for the first three years post construction. Monitoring will consist of walking each site to document presence/absence of invasive/noxious species as well as overall abundance as compared to documented pre-construction species and extent and as compared to adjacent, undisturbed areas. Enbridge will address invasive species issues in accordance with its Invasive and Noxious Species Control Plan.

4.7 WETLAND ANALYSIS

As discussed above, for each plant species identified, Enbridge will record the cover value based on the Braun-Blanquet cover/abundance scale. Species abundance will only be a factor when cover is less than 5%, with cover and abundance weighted values presented in Table 4.7-1. A cumulative cover will be recorded for those woody species with multiple height classes. Additionally, Enbridge will record the wetland indicator status rating as listed in the National Wetland Plant List and the relative cover of hydrophytes [obligate ("OBL")[7], facultative wet ("FACW"), or facultative ("FAC")]. The total coverage of hydrophytes (OBL–FAC) will be summed across strata, divided by the total coverage of all plant species (OBL–UPL) across all strata, and multiplied by 100 to calculate the percentage of hydrophytic species present.

[6] Guidance on Design, Installation and Interpretation of Monitoring Wells for Wetland Hydrology Determinations (ERDC TN-WRAP-05-2 June 2005)

[7] Obligate Wetland (OBL), Facultative Wetland (FACW), Facultative (FAC), Facultative Upland (FACU), and Upland (UPL).

Table 4.7-1: Absolute Cover and Abundance Scale

Cover Range	Defined	Numerical Weight
75-100%	Assigned to a species within a particular physiognomic group when that species' cover is between 75% and 100% of the relevé plot area.	5
50-75%	Assigned to a species within a physiognomic group when that species' cover is between 50% and 75% of the relevé plot area.	4
25-50%	Assigned to a species within a physiognomic group when that species' cover is between 25% and 50% of the relevé plot area.	3
5-25%	Assigned to a species within a physiognomic group when that species' cover is between 5% and 25% of the relevé plot area.	2
<5%	Assigned to a species within a physiognomic group when there are numerous individuals of the species, but those individuals collectively cover less than 5% of the relevé plot area.	1
	Assigned to a species within a physiognomic group when there are only a few (approximately 2–20) individuals of the species and those individuals collectively cover less than 5% of the relevé plot area.	0.5
	Assigned to a species within a physiognomic group when there is only a single individual of the species (a plant with two stems arising from the same	0.25

In addition to the analyses described above, in Years 4 and 6 Enbridge will further evaluate life form[8] information in the sample plots located within the temporary workspace in PFO/PSS wetlands. Woody species within the sample plots will be identified and recorded as well as the respective height classes for broadleaf deciduous and needleleaf evergreen species[9]. The overall life form cover for broadleaf deciduous and needleleaf evergreen species regardless of height classes will be evaluated to document the progression of woody species establishment in wetland areas having woody species pre-construction.

Additionally, Enbridge will document primary and secondary field hydrologic indicators, which can be made via visual assessments and without digging, along with identifying the primary driver of hydrology (i.e., recharge vs discharge). The relevant indicators are presented in Table 4.7-3.

Table 4.7-2: Hydrologic Indicators

Indicator	Indicator Class	Indicator Class
Surface Water	A1	Primary
Water Marks	B1	Primary
Sediment Deposits	B2	Primary
Drift Deposits	B3	Primary
Algal Mat or Crust	B4	Primary
Sparsely Vegetated Concave Surface	B5	Primary
Water-Stained Leaves	B9	Primary

[8] Life Forms: The general morphologic category of plants including (A)broadleaf evergreen (B), broadleaf deciduous (D), needleleaf evergreen (E), graminoids (G), forbs (H), climbers (C), floating-leaved (F), submerged (S).
[9] 0-0.5m, 0.5-2m, 2-5m, and 5-20m

Indicator	Indicator Class	Indicator Class
Aquatic Fauna	B13	Primary
Surface Soil Cracks	B6	Secondary
Moss Trim Lines	B16	Secondary
Crayfish Burrows	C8	Secondary
Stunted or Stressed Plants	D1	Secondary
Geomorphic Position	D2	Secondary
Microtopographic Relief	D4	Secondary

4.8 WETLAND PERFORMANCE CRITERIA

The following performance criteria is separated by those wetlands evaluated by means of timed meander surveys versus wetlands evaluated by means of plot monitoring. Wetland restoration shall be considered successful at the end of the monitoring period if all the following criteria are satisfied:

General Low Quality and Low-Invasives Wetlands

Table 4.8-1: General Wetland Performance Requirements – Low/Low Invasive Quality Wetlands

Variable	Performance Criteria (Non-conversion Wetlands)
Native versus Non-native species cover	Relative vegetation cover of native, non-invasive plant species should be at least 70 percent. Relative vegetation areal cover of non-native/invasive species should not be greater than 30 percent of total cover or no greater than 15 percent non-native species coverage as compared to pre-construction conditions. Cover categories are specific to timed meander survey efforts only.
Maximum Unvegetated Area	No bare areas greater than 10 square feet. **Exceptions:** vernal pools, drainage channels in floodplain forests, and sparsely-vegetated concave surfaces in hardwood swamps.
Relative Areal Cover of Hydrophytes (all strata cumulatively)	Relative aerial coverage of hydrophytes should be at least 51 percent. Cover hydrophytes are specific to timed meander survey efforts only.

Medium Quality Wetlands

Table 4.8-2: General Wetland Performance Requirements – Medium Quality Wetlands

Variable	Performance Criteria (Non-conversion Wetlands)
Native versus Non-native species cover	Relative vegetation cover of native, non-invasive plant species should be at least 80 percent. Relative vegetation cover of non-native/invasive species should not be greater than 20 percent of total cover or no greater than 10 percent non-native species coverage as compared to pre-construction conditions. Cover categories are specific to timed meander survey efforts only.
Maximum Unvegetated Area	No bare areas greater than 10 square feet. **Exceptions:** vernal pools, drainage channels in floodplain forests, and sparsely-vegetated concave surfaces in hardwood swamps.
Relative Areal Cover of Hydrophytes (all strata cumulatively)	Relative aerial coverage of hydrophytes should be at least 75 percent. Cover hydrophytes are specific to timed meander survey efforts only.

Higher Quality Wetlands (and Medium Wetlands with High FQI Rating)

Table 4.8-3: High Quality Wetland Performance Requirements

Variable	Performance Criteria (Non-conversion Wetlands)
Native versus Non-native species cover	Relative vegetation cover of native, non-invasive plant species should be at least 90 percent. Relative vegetation cover of non-native/invasive species should not be greater than 10% percent of total cover or no greater than five percent non-native species coverage as compared to pre-construction conditions. Cover categories are specific to plot survey results.
Life Form Cover	This metric will not be used to directly measure success or failure but instead used to guide any prescribed adaptive management measures for TWS areas within previously PFO/PSS wetlands. This assumes that these systems will be dominated by graminoids with interrupted to continuous cover (50-100%), where forb cover is rare to patchy (5-50%)
Maximum Unvegetated Area	No bare areas greater than 10 square feet. **Exceptions:** vernal pools, drainage channels in floodplain forests, and sparsely-vegetated concave surfaces in hardwood swamps.
Relative Areal Cover of Hydrophytes (all strata cumulatively)	Relative aerial coverage of hydrophytes should be at least 75 percent. Cover of hydrophytes are specific to plot survey results.

Additional restoration criteria include:

- Wetland topography is restored to baseline conditions and/or similar to the topography of adjacent undisturbed wetland areas. Baseline topographic conditions shall be informed from pre- and Year 1 post-construction LiDAR surveys;
- there is no evidence of adverse changes to baseline hydrology and drainage; and
- if natural rather than active revegetation was used, the plant species composition and distribution is consistent with early successional wetland plant communities in the affected ecoregion.

4.8.1 Wetland Monitoring Well Hydrology

Wetland hydrology monitoring via monitoring wells will be considered successful if the in-trench and down-gradient well water table elevations are within 20 percent of the up-gradient water table elevations and exhibit similar fluctuations as compared to the reference monitoring well water table elevation changes.

5 WATERBODY IDENTIFICATION, ASSESSMENT, AND DISTURBANCE

5.1 WATERBODY IDENTIFICATION

Table 5.1-1 summarizes the number and types of waterbodies that are crossed by the pipeline centerline.

Table 5.1-1: Summary of Pipeline Centerline Waterbody Crossings

Delineated Waterbody Regime	Total Number of Waterbodies	Waterbodies Crossed by HDD/Direct Pipe Method	Waterbodies Crossed by Trenched Method
Perennial	29	16	13
Intermittent	40	9	31
Ephemeral	33	5	28
PROJECT TOTAL	102	30	72

Notes: Delineated waterbodies are based on 2019 and 2020 field surveys. Includes rivers, streams, swales, and ditches. Includes one WDNR 24K Hydrography Data waterway (WDH-18) where survey was not permitted in a highway median and 17 WDH waterbodies where a navigability determination by WDNR is requested.

As indicated in Table 5.1-1, the proposed pipeline centerline (including HDD/Direct Pipe crossings) will cross 102 waterbodies. These include 29 perennial waterbodies, 40 intermittent waterbodies, and 33 ephemeral waterbodies. An additional 36 waterbodies are within the Project mainline workspace but are not crossed by the pipeline centerline. Sixty-two waterbodies will be crossed by temporary access roads.

5.2 WATERBODY IMPACTS AND MITIGATION

Enbridge will cross the majority of waterbodies using open-cut construction methods (open-cut [wet trench] method to cross ephemeral and intermittent waterbodies at that are dry at the time of construction, or a dry crossing method such as dam-and-pump or flume if water is present), which will require trenching to install the pipeline. Enbridge will cross the remaining waterbodies using a trenchless method, which will avoid direct impacts on the water, bed, and banks of these watercourses.

Potential temporary waterbody impacts associated with pipeline construction include the clearing of bank vegetation and the disturbance of bed and banks; impacts on stream flow and water quality including the suspension and downstream transport of sediments; and direct and indirect loss of aquatic organisms and habitat. These effects are typically minor and short-term; generally limited to the construction and near downstream area and the periods of active construction; and quickly dissipate once the bed and banks are restored, stabilized, and revegetated.

Enbridge will mitigate waterbody impacts through implementation of the procedures set forth in the EPP and site-specific streambank restoration plans. Enbridge will cross larger waterbodies using a trenchless method. Enbridge will use a dry crossing method (either dam and pump or flume) at all other waterbodies if flowing or standing water is present. Enbridge's use of a dry crossing method will maintain flows and use temporary dams upstream and downstream of the pipeline crossing to isolate the waterflow from the work area. Enbridge will only use the open cut (wet trench) method, which does not isolate the work area from streamflow, to cross waterbodies that are dry at the time of construction. Enbridge has also reduced the width of the construction right-of-way at most waterbody crossings to 95 feet. The actual instream disturbance associated with excavation will typically be only 20 feet, depending on the cohesive nature of the substrate. For dry crossings, the isolated segment of the stream will be determined based on site-specific conditions, but typically is less than 50 feet wide. Enbridge's selective application of these methods and narrower right-of-way width will avoid or minimize instream work and the potential for sedimentation and other waterbody impacts.

5.3 WATERBODY RESTORATION

Waterbody restoration will be performed at open cut crossings. Following installation of the pipeline where open cut methods are used, Enbridge will backfill the pipeline using the native materials excavated from the trench. During initial excavation, the first material excavated from the trenchline will be segregated and used to cap the trenchline during backfilling; thereby preserving the native streambed material. Enbridge will restore the bed and banks of each stream. The bed elevations will be matched to adjacent bed elevations to avoid impediments to normal water flow. The streambanks will be restored as near as practicable to preconstruction conditions unless the original slope is determined to be unstable. If there is a potential for significant bank erosion, the Contractor may stabilize disturbed stream banks with rock riprap or other bank protection, with WDNR and USACE approval. Enbridge has identified areas where site-specific restoration methods will be used based on pre-construction bank conditions. Where dry crossing methods are used, the temporary dams, flumes/hoses and pumps will be removed after the bed and banks are restored.

Temporary slope breakers will be installed on all sloped approaches to streams in accordance with the spacing requirements outlined in the EPP. Trench breakers will also be installed at the stream banks, as necessary, where slopes are adjacent to the waterbodies to prevent subsurface water flow and erosion along the trench line. Trench breakers typically consist of geotextile-fabric sandbags filled with rock-free subsoil or sand and placed from the bottom of the trench to near the top surrounding the pipe. Other material such as bentonite filled bags or polyethylene foam may also be used. Permanent stabilization will be initiated within 24 hours unless site and weather conditions delay installation of permanent stabilization measures.

Once the banks are reshaped, the banks will be seeded and stabilized with erosion control Best Management Practices ("BMPs") as specified in the EPP. Stream bank vegetation will be reestablished using the seed mix specified in Appendix B of the EPP, unless applicable agencies specify otherwise. Where a waterbody is within a wetland, the banks will be reseeded with the applicable wetland seed mix.

The travel lane portion of the construction right-of-way and the temporary bridge will remain in place until pipeline construction activities are complete. Permanent slope breakers will be installed across the full width of the right-of-way during the final cleanup. The Contractor will remove temporary bridges during the final cleanup and restoration phase of construction after the installation of the new pipeline and right-of-way access is no longer required. Enbridge will maintain temporary erosion/sediment control devices ("ECDs") across the construction right-of-way until final site stabilization. Temporary ECDs will only be removed after achieving vegetative cover, in accordance with permit conditions.

No routine post-construction maintenance or work is anticipated to be conducted in waterbodies; however, Enbridge will generally maintain a 50-foot-wide operational corridor along the pipeline in an herbaceous state to facilitate aerial monitoring and pipeline access.

5.4 WATERBODY MONITORING OBJECTIVES

The goal of the post-construction waterbody monitoring program will be to assess quantitatively and/or qualitatively the success of post-construction waterbody restoration through documentation of physical waterbody parameters including bed and bank elevations and contours, bank and bed composition and stabilization, and water quality, depth, and flow. The following protocol was developed to establish a standardized monitoring procedure that will be used to evaluate the effectiveness of waterbody restoration efforts, to document overall success, and to identify areas that may require additional remediation.

5.5 WATERBODY MONITORING METHODOLOGY

Enbridge proposes to visually monitor each waterbody crossing during the growing season following construction to confirm the successful stabilization of streambanks and restoration of waterbody flow relative to the pre-construction baseline data. If possible, the subsequent monitoring will be performed during the same season/time of year as the Year 1 monitoring.

During each visit Enbridge will document:

- bank and near bank (within 50 feet of bank) stabilization and revegetation;
- any observed soil slumping or erosion;
- bank height and width;
- waterbody depth, and flow;
- streambed characteristics and composition of the substrate; and presence of fish habitat such as undercut banks, instream structures (e.g., logs), potential spawning gravel.

Each of these physical parameters will be documented at the crossing location and recorded on data sheets along with the date, time, and location of the observation, the waterbody name, and additional notes on the condition of the surrounding right-of-way, any evidence of third-party activity (off-road-vehicles, grazing, recent construction, etc.), any evidence of erosion, flooding, or notable changes in bank or channel morphology.

In addition to recording physical attributes, during the first year of monitoring, Enbridge will collect grab samples approximately 100 feet upstream and downstream of the pipeline crossing locations of flowing streams. The chemical parameters sampled throughout post-construction monitoring and the sampling schedule is described in greater detail in the WQMP. Chemical parameter analysis will be completed by a certified laboratory using standard analytical methodologies (see the WQMP for chemical analytical analysis methodologies). DO, pH, conductivity, and temperature measurements will be collected in the field using standard analytical methodologies. Additional sampling will be conducted in subsequent monitoring years for any stream that exhibits substantial differences between the upstream and downstream samples for any of the measured attributes.

5.6 WATERBODY SUCCESS CRITERIA

Waterbody restoration shall be considered successful if all of the following criteria are satisfied:

- the waterbody bank is stable and successfully revegetated (based on the appropriate wetland/upland success criteria);
- the height and width of the stream bank approximate preconstruction baseline conditions and/or adjacent undisturbed bank areas;
- the depth and flow characteristics (i.e., free flow without construction related impediment) of the waterbody approximates the preconstruction baseline conditions and/or adjacent undisturbed areas;
- the composition of the bed substrate approximates the preconstruction baseline conditions and/or adjacent undisturbed beds areas; and
- the collected water quality parameters at the upstream and downstream have similar resulting values.

6 WETLAND AND WATERBODY POST-CONSTRUCTION RESTORATION AND CORRECTIVE ACTIONS

Enbridge will work closely with the WDNR and the USACE to determine success or identify if additional restoration is required if performance standards are not reached after the planned monitoring is completed, or if an issue is identified during the monitoring period that may affect restoration success. Post-construction restoration activities will be adaptive, based on the results of monitoring, changing site conditions (e.g., land use), and geared toward the final goal of restoring pre-construction characteristics of the resource (i.e., vegetation and hydrology). In determining whether corrective action is needed, Enbridge will evaluate the potential resource impacts from conducting the additional restoration compared to taking no action with continued monitoring.

Not every potential corrective action can be determined at this time but possible corrective measures that may need to be implemented include:

- Installation of additional erosion controls or sediment barriers to stabilize soils and capture or redirect runoff;
- Regrading or recontouring to address topography or hydrology issues;
- Implementation of integrated approaches to invasive or noxious weed infestations as outlined in Enbridge's Invasive and Noxious Species Management Plan and in accordance with Section 4.0 of Enbridge's EPP;
- Reseeding and/or the addition of soil amendments, or supplementing the original seed mix to meet success criteria; and
- Supplemental plantings of tree and/or shrubs in selected areas to enhance stabilization or vegetation diversity.

Enbridge will address site stabilization issues that are identified during monitoring. Erosion and sediment control BMP deficiencies that have the potential to allow silt-laden water to enter wetlands or waterbodies will be prioritized and promptly addressed to prevent resource impacts. If the selected erosion and sediment control BMP is not effective at a particular location (e.g., continued failure), other solutions will be evaluated, such as re-contouring an area to alleviate a drainage flow pattern that is causing erosion or adding additional erosion and sediment control BMPs to divert drainage to a well-vegetated area.

Examples of topography or hydrology-related issues that may require additional restoration include: unexpected ponding, unexpected drainage, and/or disruptions to flow patterns causing changes in pre-construction wetland hydrology. Corrective actions, such as regrading or recontouring, will be implemented if crowning, subsidence, or the restored grade is determined to be interfering with the goal of re-establishing vegetative communities according to the local ecotype, or pre-construction wetland hydrology. Where such issues have been identified, Enbridge will reference pre-construction baseline data including available pre-construction ground elevation data.

Corrective actions for unexpected alterations to groundwater flow related to changes in topography may include regrading or recontouring. Corrective actions that may result in additional temporary impacts on a wetland or waterbody will be conducted according to pertinent permit requirements and in consultation with applicable Agencies.

If the cover of invasive species within a particular community type is too high within the construction workspace compared to the percent cover of the same species in adjacent undisturbed areas outside of the construction workspace, Enbridge will manage the issue in accordance with its Invasive Species Management Plan.

Monitoring may determine that some areas have not successfully revegetated after the first growing season. Causes for seeding failure can include poor germination or insufficient seeding "take" as a result of adverse weather conditions, unfavorable soil conditions, disturbance from cattle or wildlife, competition from invasive species, or erosion. Enbridge will reseed areas that are not adequately revegetated during the monitoring period.

Changes in hydrology can also prevent successful restoration. If impacts on hydrology are identified, Enbridge will take actions to restore the hydrology. Other actions may also be taken, such as regrading areas to correct topography, fertilizing low nutrient soils, decompacting soils, setting up exclusion areas to stop grazing or foraging, implementing Enbridge's Invasive Species Management Plan, and/or supplementing seed mixes.

7 MACROINVERTEBRATES

The purpose of macroinvertebrate collection will be to document baseline and post-construction macroinvertebrate community condition (assemblage and diversity). Enbridge will collect macroinvertebrate samples at 13 perennial

streams (where appropriate habitat exists) crossed by the pipeline using a dry crossing technique. Please see Enbridge's WQMP for additional details.

8 REPORTING

The results of the wetland and waterbody monitoring efforts will be submitted to the USACE and WDNR following each survey year, no later than December 31. The report will include data forms, photographs, location maps, comparisons of upstream and downstream water quality parameters, an analysis of the results and any notable issues, and a recommendation for any additional restoration activities.

If any of the applicable success criteria discussed in Sections 4.8 for wetlands and 5.6 for waterbodies are not met by the end of six years of monitoring, a remedial revegetation plan will be developed and submitted to the USACE and WDNR.

9 REFERENCES

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States.* Washington, DC: U.S. Fish and Wildlife Service Pub., FWS/OBS-79/31. December.

Eggers, Steve D., and Reed, Donald M. 2014. *Wetland Plants and Plant Communities of Minnesota and Wisconsin.* Accessed May 2021. Available online at https://www.mvp.usace.army.mil/Portals/57/docs/regulatory/WetlandBook/Part%201%20-%20Introduction,%20Key%20to%20Plant%20Communities,%20Shallow%20Open%20Water%20Communities.pdf

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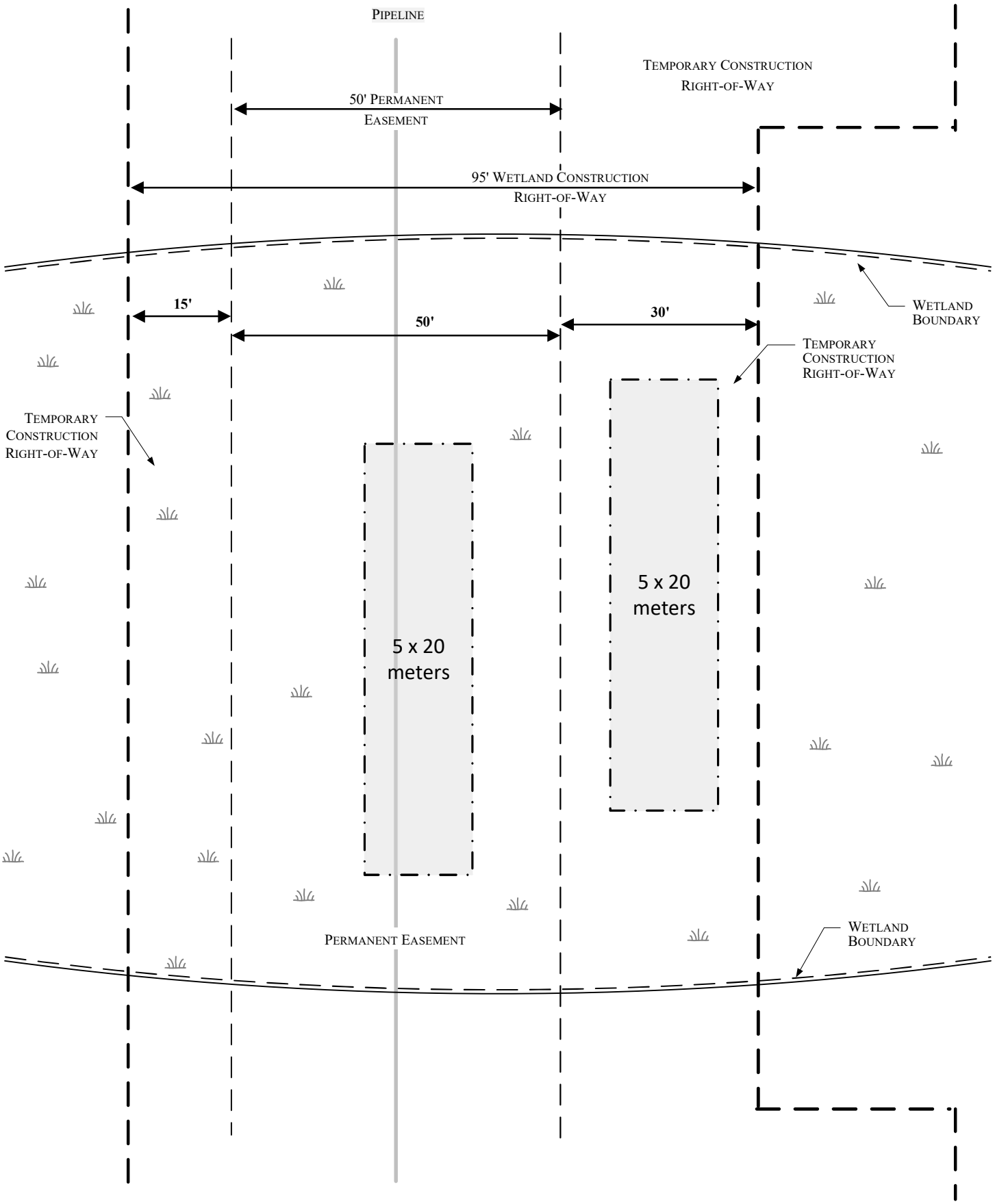

ENBRIDGE

Figure 1

Line 5 Wisconsin Segment Relocation Project

Post-Construction Wetland Monitoring Plots

Scale: NTS
Date: 2/26/2024
Revised: 2/26/2024
Location: C:\Users\Randall.Cutting\Desktop\EPP\

APPENDIX A

WETLANDS WITH PROPOSED MONITORING WELLS

APPENDIX B

SAMPLE MONITORING DATA FORMS

PLOT SAMPLING DATA FORM – EMERGENT WETLANDS Surveyors: _____

Line 5 Project Post-Construction Wetland Monitoring

Plot ID: _____ Date:_____ Monitoring Year: _____

Species	Wetland Status	Native Species (Y/N)	Percent Cover
Total Percent of Native Hydrophytes (FAC or wetter):			
Total Percent Cover:			
Relative Percent of Native Hydrophytes:			
Notes:			
Photo Number(s):			

Line 5 Project Post-Construction Wetland Monitoring

Surveyors: _____

Wetland ID: _____ Date:_____ Monitoring Year:

Species	Abundance Code:

Symbol	Abundance Code	Description
A	Abundant	The dominant plants throughout the site
C	Common	Locally abundant or frequently encountered
O	Occasional	Occasionally encountered, or locally common but absent or infrequent across much of the site
U	Uncommon	Infrequently encountered
R	Rare	Very few plants seen

Primary Hydrology Indicators (circle all that apply):				Secondary Hydrology Indicators	
[A1] Surface Water	[B3] Drift Deposits	[B9] Stained Leaves	[C4] Reduced Fe+	[B6] Soil Cracks	[D1] Stunt/Stress
[A2] Water Table	[B4] Algal Mat/Crust	[B13] Aquatic Fauna	[C6] Fe+ Tilled Soil	[B10] Drainage Patterns	[D2] Geomorphic Position
[A3] Saturation	[B5] Iron Deposits	[B14] True Aquatic Plants	[C7] Thin Muck	[C2] Dry Season H_2OTable	[D5] FAC-Neutral
[B1] Water Marks	[B7] Aerial Inundation	[C1] H_2S Odor	[D9] Gauge/Well	[C8] Crayfish Burrows	
[B2] Sediment Deposits	[B8] Bare Concave Surface	[C3] Rhizospheres	Other:	[C9] Aerial Saturation	

Original Wetland Delineation Indicators:

Notes:

Photo Number(s):

Linear Waterbody Data Sheet

Survey Description

Project Name:	Waterbody Name:	Waterbody ID:	Date:
Line 5 Relocation Project			

State:	County:	Company:	Crew Member Initials:	Photos:
WI		Enbridge		

Tract Number(s):	Nearest Milepost	Associated Wetland ID(s):

Survey Type: *(check one)* ☐ Centerline ☐Re-Route ☐Access Road ☐Other:

Physical Attributes

Stream Classification: *(check one)* ☐ Ephemeral ☐Intermittent ☐Perennial

Waterbody Type: *(check one)* ☐River ☐ Stream ☐ Ditch ☐ Canal ☐ Other:

OHWM
Width: _____ft.
Height: _____in.
N/A☐

OHWM Indicator: *(check all that apply)*
☐ Clear line on bank ☐Shelving ☐ Wrested vegetation ☐Scouring ☐Water staining
☐ Bent, matted, or missing change vegetation ☐Wrack line ☐ Litter and debris ☐Abrupt plant community change ☐Soil characteristic

Width of Waterbody - Top of Bank to Top of Bank:	Width of Waterbody - Toe of Slope to Toe of Slope:	Width of Waterbody - Water Edge to Water Edge:	Depth of Water: *(Approx.)*
_____ft.	_____ft.	_____ft. N/A☐	_____ft. N/A☐

Sinuosity: *(check one)*	Water velocity: *(Approx.)*	Bank height	Bank slope
☐ Straight ☐Meandering	_____fps N/A☐	**Right:** _____in **Left:** _____in	**Right:** ___degrees **Left:** ___degrees

Qualitative Attributes

Water Appearance: *(check one)* ☐No water ☐Clear ☐Turbid ☐Sheen on surface ☐Surface scum ☐Algal mats ☐Other:

Substrate: *(check all that apply)* ☐ Bedrock ☐ Boulder ☐Cobble ☐ Gravel ☐ Sand ☐ Silt/ clay ☐Organic ☐ Other:
% of Substrate: _____% _____% _____% ____% _____% ____% _____% _____%

Width of Riparian Zone: _____ft. N/A☐

Vegetative Layers: *(check all that apply)* ☐ Trees: ☐ Saplings/Shrubs: ☐ Herbs
Avg. DBH of Dominants: *(approx.)* _____in. _____in. _____in.

Dominant Bank Vegetation *(list)*:

Aquatic Habitats (ex: submerged or emerged aquatic vegetation, overhanging banks/roots, leaf packs, large submerged wood, riffles, deep pools):

Aquatic Organisms Observed *(list)*:

T&E Species Observed *(list)*:

Disturbances (ex: livestock access, manure in waterbody, waste discharge pipes):

Waterbody is: *(check one)* ☐Natural ☐ Artificial, man-made ☐ Manipulated

Stream Quality [a]**:** *(check one)* ☐High ☐ Moderate ☐ Low

Waterbody ID:

[a] **High Quality:** Natural channel, natural vegetation extends at least one or two active channel widths on each side; banks stable and protected by roots; water color is clear to tea-colored; no barriers to fish movement; many fish cover types available; diverse and stable aquatic habitat; no disturbance by livestock or man.

Moderate Quality: Altered channel evidenced by rip-rap; natural vegetation extends 1/3-1/2 of the active channel width on each side; filtering function or riparian vegetation only moderately compromised; banks moderately unstable; water color is cloudy, submerged objects covered with greenish film; moderate odor; minor barriers to fish movement; fair aquatic habitat; minimum disturbance by livestock or man.

Low Quality: Channel is actively down cutting or widening; rip rap and channelization excessive; natural vegetation less than 1/3 of the active channel width on each side; lack of regeneration; filtering function severely compromised; banks unstable (eroding); water color is muddy and turbid; obvious pollutants (algal mats, surface scum, surface sheen); heavy odor; severe barriers to fish movement; little to no aquatic habitat; severe disturbance from livestock or man.

Notes:

Waterbody Sketch (*Include north arrow, centerline, distance from centerline, data point location, survey boundary, and IDs of associated features*)

Wetland and Waterbody Restoration and Post Construction Monitoring Plan
Line 5 Wisconsin Segment Relocation Project
Proposed Wetlands for Groundwater Monitoring Wells

Sort	FeatureID[a]	WDNR Watershed	Feature Type	County	Anticipated Blasting Areas [b]	Milepost	Ownership	Latitude	Longitude	Pipeline Centerline Crossing Length (feet)	Project Component Name/Location	Proposed Pipeline Crossing Method	Cowardin [c]	Circular 39 [d]	Eggers and Reed [e]	WRAM Functional Value Rating
542	wasc071f	Upper Bad River	Wetland	Ashland	Yes	22.70	Private	46.345827	-90.676678	408.33	Mainline ROW	Trench	PFO	Type 7	Hardwood Swamp	High
564	wasa038f	Upper Bad River	Wetland	Ashland	Yes	23.67	Private	46.337131	-90.663365	496.67	Mainline ROW	Trench	PFO	Type 7	Hardwood Swamp	**Medium**
650	wasv055f	Tyler Forks	Wetland	Ashland	Yes	27.60	Private	46.358308	-90.598723	333.37	Mainline ROW	Trench	PFO	Type 7	Hardwood Swamp	Medium
672	wasa031f	Tyler Forks	Wetland	Ashland	Likely	28.39	Private	46.365586	-90.588239	201.12	Mainline ROW	Trench	PFO	Type 7	Hardwood Swamp	Medium
686	wasw023ss	Tyler Forks	Wetland	Ashland	Likely	28.67	Private	46.366528	-90.582597	125.13	Mainline ROW	Trench	PSS	Type 6	Alder Thicket	**High**
698	wasw021f	Tyler Forks	Wetland	Ashland	Yes	29.38	Private	46.371899	-90.569318	515.51	Mainline ROW	Trench	PFO	Type 7	Hardwood Swamp	High
706	wasw025f	Tyler Forks	Wetland	Ashland	Yes	29.50	Private	46.373135	-90.567640	469.33	Mainline ROW	Trench	PFO	Type 7	Hardwood Swamp	High
712	wasw026f	Tyler Forks	Wetland	Ashland	Yes	29.59	Private	46.373781	-90.566767	154.82	Mainline ROW	Trench	PFO	Type 7	Hardwood Swamp	High
713	wasw012f	Tyler Forks	Wetland	Ashland	Yes	29.77	Private	46.375525	-90.564016	117.16	Mainline ROW	Trench	PFO	Type 7	Hardwood Swamp	Medium
714	wasw013ss	Tyler Forks	Wetland	Ashland	Yes	29.79	Private	46.375737	-90.563511	209.40	Mainline ROW	Trench	PSS	Type 6	Shrub-Carr	Medium
716	wasw012f	Tyler Forks	Wetland	Ashland	Yes	29.86	Private	46.376159	-90.562598	930.02	Mainline ROW	Trench	PFO	Type 7	Hardwood Swamp	Medium
754	wirb1007f	Tyler Forks	Wetland	Iron	Yes	31.07	Public	46.387829	-90.545375	1059.98	Mainline ROW	Trench	PFO	Type 7	Hardwood Swamp	High
846	wird027f	Tyler Forks	Wetland	Iron	No	32.79	Public	46.408849	-90.531351	1083.32	Mainline ROW	Trench	PFO	Type 7	Hardwood Swamp	Medium
905	wirc013f	Potato River	Wetland	Iron	No	34.33	Public	46.426692	-90.513356	1532.89	Mainline ROW	N/A	PFO	Type 7	Hardwood Swamp	High

[a] Wetland/waterbody unique identification is based on 2019/2020 field survey data and Wisconsin Wetland Inventory Desktop Mapping (WDNR, 1992).

[b] Anticipated blasting areas were determined based on a multi-phase study including (1) desktop analysis of publically available soils information including Natural Resources Conservation Service soils data, United States Geological Survey bedrock outcrop data, historical well data, and geotechnical soil bore data; and (2) field investigations including additional geotechnical borings, electircal resistivity imaging, and hammer probing to a depth of 12 feet or multiple probe refusal; and (3) data analysis. Areas identified as "Likely" may encounter bedrock at a depth above the planned pipeline installation depth.

[c] PEM = Palustrine Emergent; PSS=Palustrine Scrub Shrub; PFO = Palustrine Forested (Cowardin, 1979).

[d] Type 1 = Seasonally flooded basin or flat; Type 2 = Inland fresh meadow; Type 3 = Inland shallow marsh; Type 4 =Inland deep marsh; Type 6 = Shrub swamp; Type 7 = Wooded swamp; Type 8 = Bog

[e] (Eggers and Reed, 2015).